Remarks

Claims 45-57 have been allowed.

Allowance of some of the other claims has been withdrawn. Applicants contend that the claims are now in condition for allowance and should be allowed.

All of the claims are rejected based on a set of reference, either alone or in combination. A brief summary of the references is presented first. Then, the rejections to the specific claims are discussed.

References Cited

As understood, the references relate either to different problems or different solutions to the problem Applicants have solved.

Lechleider

This reference describes a system and a method for estimating the ability of a subscriber loop to support broadband services. This reference recognizes the difficulty in determining which lines can support high-speed data services. However, the solution proposed by this reference is to make, what is essentially two-ended measurements on the lines. Though the reference describes making measurements from a central location, it is actually using an end-to-end modem connection (i.e. data is being derived from equipment installed at both ends of the line). In particular, the reference teaches to use data derived from the training sequence of a voice-band modem.

Beierle

This reference relates to qualifying lines for digital transmissions based on the length of the line. The reference measures capacitance to determine the length of the line. The reference teaches a specific frequency at which the capacitance should be measured.

Nagato

This reference relates to a system for central monitoring of subscriber lines in a multiplexed system. This system is for detecting faults in the line using analog measurements. The problem described in the reference is that in a multiplexed system, it is not possible to measure analog values on the subscriber lines from a central location because the analog signals can not be transmitted across the multiplexed portion of the

line. The solution presented by the reference is to include a terminal near the central office that produces analog signals that emulate a faulty line.

Bjork

This reference relates to a qualification system that uses a Time Domain Reflectometer (TDR). A TDR is a device that sends a pulse down the line and analyzes the line based on reflections of that pulse caused by the structure of the line. The pulse is measured as a voltage on the line at different times.

The TDR works because different conditions on a line reflect a pulse differently. Different faults will make different shaped reflections. The reference I s teaching how to analyze a line based on the shape of the reflected voltage pulse.

A pulse of the type used in the TDR has very high frequencies. Therefore, the pulse does not travel well through a switch. Note that column 2, line 58 expressly indicates that the line is disconnected from the switch for testing.

Peoples

This reference dates back to 1977, at a time when the most prevalent use of telephone lines was to transmit voice information. The reference describes a common practice at the time: placing load coils on the line to improve the quality of voice transmission over the telephone line (note column 1, line 23). The reference teaches a way to compute the loading on the line that is much faster than a trial and error approach previously used.

Burgess

This reference relates to a system that blocks a customer from using a line for services for which the customer has not paid for.

Eichen

This reference describes a method and apparatus for digital subscriber loop qualification. As part of the method, one or more facilities data bases are queried to look up information about the subscriber loop. Measurements are also taken and the resulting information is combined in an expert system that indicates which data services (and the bandwidth) the line will support.

Harris Model 105A

Applicants have a Harris White Paper entitled *Testing the Unbundled Loop: The Challenge for ILECs & CLECs.* The copy applicants have is undated. It mentions a Model 105A that can prequalify lines for new services. However, the operation of that unit is not described. Harris' web site describes the unit:

> The Harris Model 105A RTU provides accurate and in-depth loop testing to identify transmission and noise troubles that affect modems, faxes and other services. The Model 105A can perform single demand tests and sequential scans. Testing includes DC leakage and voltage, AC voltage, current, capacitance and ringer direction, noise measurements, loaded loop tests, and inward or CO line circuit tests.

102 Rejection of Claims 1-3, 34-35, 40-43 Based on Lechleider

Applicants note that the Lechleider states that it measures from a central location. However, Lechleider requires that there be a modem at the customer premises. Lechleider must be using the term "measuring from a central location" differently than in the present application. To avoid the confusion, applicants have changed the wording in the claim to recite one-ended measurements. This term is supported in the specification at Page 6, line 20.

The ability to predict performance of the line without the need for a device at the customer premises is, applicants believe, an important advantage. This difference is not obvious.

Furthermore, applicants disagree with the Examiner's interpretation of the reference. Applicants disagree that the reference uses a modem model as in the claim. For example, "modem information" is not the same as a "modem model." As understood, the reference actually uses a modem as a measuring device. An analog modem outputs information as it operates, which the reference teaches can be used to predict performance for digital data services. At no point does the reference teach using a model of the modem that would be used for digital data services.

The dependent claims provide even further distinguishing features. For example, claim 40 recites details of the modem model, including predicted data rates based on normalized line length and noise level.

Claim 43 recites use of a proxy line. Applicants disagree that the reference teaches use of a proxy line. As understood, the reference describes taking measurements

on the actual line that a subscriber would use. At no point does it teach selecting a line that would be expected to behave similarly to the line of interest and testing that line as a proxy for testing the actual line that would be used.

Thus, these claims can not be said to be anticipated or obvious based on the reference.

103 Rejection of Claims 4, 36 Based on Lechleider and Beierle

These claims depend from claims 1 and 34 and the arguments presented above apply to these claims.

Further, Applicants disagree that it is proper to combine these references. The references teach complete techniques to qualify subscriber lines. There is no teaching or suggestion to select components of the technique in Beierle to modify the technique of Lechleider.

Also, admittance is not expressly mention in FIG. 3 of Beierle. Further, the reference seems to describe measurements at single frequencies. Accordingly, Applicants dispute that combination of the references, even if the references could be combined, would not result in the claimed invention.

Thus, the claims can not be said to be obvious.

103 Rejection of Claims 5, 37 Based on Lechleider and Beierle and Nagato

These claims depend from claims 4 and 36. Thus, the arguments presented above apply to these claims.

Applicants further argue that these references can be properly combined. Each of Lechleider and Beierle recites a specific technique for qualification. Nagato deals with a way to pass analog measurements across a multiplexed digital link. Thus, there is no motivation to combine Nagato with the other references.

Further, Nagato is not understood to teach the claim elements added by the dependent claims. Finding two of the three recited admittance values seems not be referenced in FIG. 2 of the reference.

103 Rejection of Claims 6, 8-10, 38-39 Based on Lechleider and Beierle and Nagato and Bjork

These claims depend from claims listed above. The arguments presented above apply to these claims as well.

Further, these references are not properly combined. Each of Lechleider, Beirle and Bjork present a different measurement technique for line qualification. Not only is there no motivation to combine, but there is a disincentive. As mentioned above, Bjork

operates when the line is disconnected from the switch. Lechleider is understood to require a connection to the switch.

Further, applicants disagree that Bjork teaches determining a frequency dependent attenuation from the admittances and determining a normalized line length from a frequency dependent attenuation. The reference is understood to teach that the attenuation is measured by comparing the incident and reflected pulses (column 4, line 25). Thus, there are additional reasons why claims 6, 8, 38 and 39 are not obvious.

As to claim 10, the Examiner points to a reference that refers to one of the three measurements listed in the claim. Applicants do not see that any reference teaches the claimed combination of measurements.

103 Rejection of Claim 7 Based on Lechleider and Beierle and Peoples

Claim 7 depends from claims 1 and 4 and is not obvious for the reasons further disagree that Peoples can be properly combined with the other references. Peoples teaches putting loading on a line. The other references relate to line qualification.

103 Rejection of Claims 12-13, 18 Based on Lechleider

Applicants disagree that that Lechleider is teaching the use of a proxy line. The cited passage started at column 7, line 24 describes that measurements on the actual lines to be used might be organized by geographic location of the subscriber. It does not teach or suggest that measurements on one line be used to predict performance of other lines in the same cable.

Applicants also disagree that the reference shows one-ended measurements. As described above, Lechleider relies on a modem being present at the customer premises – i.e. there must be equipment at both ends of the line.

Claims 13 and 18 are dependent claims that provide additional details which are also not found in the reference. As described above, the reference does not show the use of a modem model, and particularly not a modem model that contains the details of claim 18.

103 Rejection of Claim 14 Based on Lechleider and Nagato

Claim 14 depends from claims 12 and 13 and is not obvious for the reasons stated above.

Claim 14 adds the same limitation that claim 5 adds, and applicants refer to the arguments presented with respect to claim 5.

103 Rejection of Claim 15 Based on Lechleider and Nagato and Peoples

Claim 15 depends from claims 12-14 and is not obvious for the reasons stated in connection with those claims.

103 Rejection of Claim 16 Based on Lechleider and Nagato and Bjork

Claim 16 depends from claims 12-14 and is not obvious for the reasons stated in connection with those claims.

103 Rejection of Claim 17 Based on Lechleider and Beierle

Claim 17 depends from claim 12 and is not obvious for the reasons stated above.

Applicants further contend that there is no motivation to combine these references. Each teaches a complete technique for qualifying a line and there is no teaching or suggestion to combine them.

103 Rejection of Claim 19, 21-23 Based on Lechleider and Burgess

Applicants contend that these references are not properly combinable. Lechleider relates to measuring a line to see if it will support high-speed communications. Burgess relates to selectively modifying the conditioning on the line so that high-speed services will be blocked. Because these references are addressed to different, almost opposite objectives, there is no teaching or motivation to combine them.

Furthermore, as stated above, Lechleider does not teach or suggest the use of a proxy line, as claimed.

The dependent claims provide further distinguishing features. Also as stated above, Lechleider does not teach one-ended measurements as recited in claim 21. Nor do any of the claims teach the modem models recited in claims 22-23.

103 Rejection of Claims 24, 26-27 Based on Eichen and Lechleider

Applicants contend that these references are not properly combinable. Each teaches a different, complete approach to line pre-qualification. There is no teaching or motivation to modify one with features of the other.

Furthermore, none of the references, even if combined, teaches the use of a modem model. Thus, claim 24 is not obvious.

As to claim 26, none of the references teaches a proxy line. This argument was presented above in connection with claim 12.

Claim 27 depends from claim 26 and is not obvious for the reasons given in connection with claim 26. Furthermore, none of the references includes a modem model, and the same arguments present with respect to claim 24 apply to claim 27.

103 Rejection of Claims 30-31 Based on Beierle and Harris and Bjork and Lechleider

Applicants disagree that these references can be properly combined. Beierle, Bjork and Lechleider each teach different approaches to the same problem and there is no teaching or motivation to combine the references as suggested. And, the techniques of the references involve seemingly contradictory conditions for operation. For example, Bjork assumes the line is disconnected from the switch, but the others seems to require that the line be connected.

Further, both of these claims recite the use of proxy lines. Applicants disagree that this feature is shown in the references. So, even if the references are combined, they do not result in the claimed invention.

103 Rejection of Claims 44 Based on Beierle and Bjork

Applicants disagree that these references can be properly combined. Bjork relates to TDR measurements – which can be used to measure a line with a high degree of accuracy. Beierle relates to estimating the length of a line by measuring capacitance. There is no reason to employ the teachings of Beierle if the technique of Bjork could be used.

Further, applicants disagree that either of the references teaches using a logical decision tree to adjust measurements made in one frequency range to predict an attenuation in a different frequency range. Thus, even if combined, the references do not teach all of the claimed features.

103 Rejection of Claims 45 Based on Beierle and Bjork and Nagato

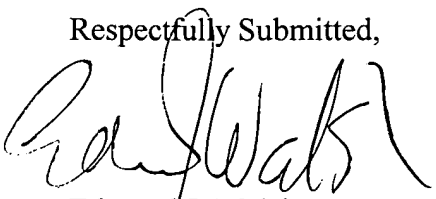
Claim 45 depends from claim 44 and should be allowed for the reasons stated above.

Further, Applicants disagree that Nagato teaches the two measurements recited in claim 45. Thus, claim 45 should be allowed.

Conclusion:

Applicant contends that the application is now in condition for allowance. A notice to that effect is earnestly solicited.

Respectfully Submitted,



Edmund J. Walsh
Reg. No. 32,950
Attorney for Applicant

Atty. Docket : 1255-US
Telephone : 617-422-2853
Fax : 617-422-2290